

Attachment F

Report of the Clearinghouse Subcommittee

Natural Resources Decision Support System for the Natural Resources Review Council

Prepared for the Natural Resources Review Council
Clearinghouse Subcommittee

By the Arizona Geological Survey
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Executive Summary

In January 2013, Governor Jan Brewer released Executive Order 2013-02, "Establishing the Arizona Natural Resources Review Council" (NRRC) to "develop land and natural resource management strategies for Arizona and coordinate with state natural resource agencies and their existing management plans." In response to the Executive Order the NRRC established four subcommittees: Geographic Information Systems (GIS), Planning, Clearinghouse Development, and Mitigation and Conservation Banking. Each subcommittee established an individual scope of work, which when combined, would help roadmap a set of processes and policies for meeting the goals of Governor Brewer's Executive Order.

This report provides the recommendations of the NRRC Clearinghouse Subcommittee to accomplish the following goal of the executive order:

"The Council shall identify and prioritize legal, legislative and incentive-based needs that protects and maintains state interests related to wildlife, land, water and other natural resources."

This report to the NRRC Clearinghouse Subcommittee proposes to meet this goal by developing the Natural Resources Decision Support System, an online system for collecting, managing and distributing information to effectively manage Arizona's natural resources. Components of the Decision Support System would include the Arizona Single Point of Contact (AZ SPOC) to receive federal agency notification materials and broadcast them to appropriate state contacts; a data and document management system to provide access to geospatial (GIS) data, documents, and maps; a user interface for system interaction and data visualization; and access to required analysis tools.

This system would be digital, online, geospatially enabled, and support interoperability. By facilitating cross agency coordination, it will allow state natural resources agencies to engage and impact federal land and resource management plans with sound and timely responses

The Clearinghouse Subcommittee proposes a multi-phase approach to developing this system:

Phase One (Year 1): The Clearinghouse Subcommittee will identify existing resources that meet the operational needs and technical requirements of the clearinghouse. During this phase, the Clearinghouse Subcommittee will also work to identify resource gaps, develop solution and budget proposals to fill the gaps, and coordinate with other subcommittees to identify opportunities for integrating with developed by other subcommittees. Clearinghouse Subcommittee will direct system development and testing of prototypes.

Phase Two (Year 2): The Clearinghouse Subcommittee will identify available resources and develop new capabilities to fill gaps identified in Phase One. During Phase Two, the Clearinghouse Subcommittee will also begin planning for the integration of infrastructure developed by other subcommittees. This development will be contingent on acquiring the resources identified in budget proposals developed during Phase One.

Phase Three (Years 3 and on): The Clearinghouse Subcommittee efforts will be fully integrated with other subcommittee efforts. During Phase Three, the anticipated Decision Support System will include the NRRC GIS system, a Single Point of Contact for the State of Arizona (AZSPOC), Federal documents and data relevant to natural resource management, and an online catalog of all available State Agency documents and datasets useful to NRRC members for planning and mitigation purposes.

Establishing the Natural Resources Review Council

Governor Jan Brewer's Executive Order 2013-02, "Establishing the Arizona Natural Resources Review Council" (NRRC) established the NRRC to "develop land and natural resource management strategies for Arizona and coordinate with state natural resource agencies and their existing management plans" (Appendix 1). Participants in the NRRC include:

- Arizona Game and Fish Department
- Arizona State Land Department
- Arizona Department of Environmental Quality
- Arizona Department of Water Resources
- Arizona State Forester
- Arizona Geological Survey
- Arizona State Parks Department
- Arizona Department of Agriculture

In response to the Executive Order the NRRC established four subcommittees: Geographic Information System (GIS), Planning, Clearinghouse Development, and Mitigation and Conservation Banking. Each subcommittee was charged with the development of a scope of work to accomplish the goals of the NRRC. This document is in response to the Clearinghouse Subcommittee's Scope of Work as presented to the NRRC.

Natural Resources Review Council Clearinghouse Subcommittee

The Governor's Executive Order directed that:

"The Council shall identify and prioritize legal, legislative and incentive-based needs that protects and maintains state interests related to wildlife, land, water and other natural resources."

In response to the Executive Order, the Council established the Clearinghouse Subcommittee.

The Clearinghouse Subcommittee interpreted the directive to be the "development and implementation of a document review Clearinghouse. In order to better organize within the state and achieve the Governor's expectations, the Clearinghouse Subcommittee identified the need to establish a mechanism that would ensure all appropriate agencies are getting information and that all agencies are able to respond to the proposed action. The clearinghouse would serve as the coordination point for the federal

government to request state review and comment, which will meet the requirements for coordination within the state. An automated system would be desirable for the agencies.”

The NRRC Chair, Larry Voyles, appointed former Council member Bob Broscheid, AZGF, as Chair of the Subcommittee. Each NRRC member agency was invited to appoint a member to the Subcommittee. The Clearinghouse Subcommittee prepared a Scope of Work (Appendix B) that was presented to the Council at the April 29, 2013 NRRC meeting.

The Clearinghouse Subcommittee Work Plan proposed to “identify and develop a process for coordinating federal actions with the state and state agencies” and will “coordinate with Governor’s Office of Strategic Planning and Budget on additional assistance as needed.”

NRRC member and GIS Subcommittee Chair, Lee Allison, was later appointed as Technical Advisor to the Clearinghouse Subcommittee.

Clearinghouse Requirements

Clearinghouse requirements developed out of the Clearinghouse Subcommittee charge, discussions within the Subcommittee, and discussions among other NRRC members include:

- fostering compatibility among state, federal, and local data for NRRC tasks
- building on and leveraging existing capabilities, standards and resources used by NRRC member and other stakeholder agencies
- providing a central access point for Federal notices, announcements, requests for review, and documents that are digital, geo-referenced, and keyword-tagged
- providing an online workspace for sharing agency reviews and comments among the agencies
- enabling NRRC members to discover and access data and documents from local, State and Federal sources and other relevant entities and bodies
- automatic notifications to NRRC partners of new postings to the Clearinghouse, based on user criteria (e.g., one or more designations of location, agency, topic, etc)
- a user interface that improves NRRC member’s ability to collaboratively discover, review, and analyze statewide GIS and other data resources alongside Federal documents and materials
- integration of State and Federal GIS and other online data seamlessly in real time
- provide appropriate resources to Agencies that do not have an in-house database or content management system

Cumulatively, these needs and requirements, coupled with the NRRC mission, effectively define the need for a decision support system for natural resource issues.

Natural Resources Decision Support System

The Natural Resources Decision Support System (NRNRDSS) would be a geospatially enabled, online system for collecting, managing, and distributing information to effectively coordinate, engage and impact federal land and resource management activities, integrating:

1. The Arizona Single Point of Contact (AZ SPOC) for federal agency materials
2. A notification system to broadcast materials to appropriate agency contacts
3. A Data and document management system
4. Geospatial (GIS) data, documents, and maps
5. A User interface for system interaction

This system would:

1. Be digital, online, and support interoperability
2. Be geospatially enabled
3. Facilitate cross agency coordination
4. Result in sound and timely responses to actions
5. List all State information resources
6. Have search and browse capabilities
7. Have access controls: public vs. state internal
8. Be people and machine readable
9. Contain metadata in tiered formats
10. Provide discovery and access to federal data

The system would aggregate materials from relevant State and Federal agencies that currently exist in disparate systems, are managed by different software, stored in multiple formats, and organized according to different nomenclatures and standards.

A recent analysis of sustainability for the AZGS-managed US Geoscience Information Network (USGIN) for support of the National Geothermal Data System (Allison, 2013) describes in more detail the specific technical and staff requirements needed for system integration, operations, and maintenance. We have extracted the relevant section of that report and included it as Appendix 4.

Arizona Single Point of Contact (SPOC)

[White House Executive Order 12372](#), "Intergovernmental Review of Federal Programs," allows each State to designate an entity, single point of contact (SPOC), to coordinate and review proposed actions on Federal lands within the State. Arizona maintained a SPOC until early in this century but it lapsed. The Clearinghouse Subcommittee proposes to designate Arizona Office of Budget and Management (OSPb) as Arizona's SPOC (AZSPOC).

The SPOC component of NRDSS would automate much of the coordination and review of Federal actions to streamline the process. Federal agencies would submit actions online through NRDSS. Relevant State agencies would receive notification of Action. After review, State agencies could submit comments back to NRDSS, requiring Federal agencies to submit action notifications electronically.



Arizona Single Point of Contact: Federal Action Registry

Title:

Description:

Tags:

Last Update:

Publisher:

Contact Name:

Contact Phone:

Contact Email:

Unique Identifier:

Download URL:

Spatial:

Category:

Related Documents:

Respond by:

Figure 1. Conceptual form for submitting Federal Actions online via electronic SPOC. Information collected (i.e. field names) are the basic required information defined in opendata.gov specifications.

Notification system

When any new action, document, dataset or other resource is submitted to the SPOC, the notification system would be triggered to automatically inform State agencies potentially impacted by action. The notification system would use built-in 'intelligence' and user-defined criteria to determine which agencies might be impacted. Agencies receiving notifications could set their notification preferences – similar to how people can set their notification preferences on LinkedIn or Facebook. When appropriate, the notification system would trigger a review and comment workflow process to assist all impacted agencies to coordinate responses and track status of the state response. After review and sign-off by responsible Arizona agencies, the review package would be submitted to the federal Agency that originally registered the Action. The process(es) for a coordinated review and approval process are yet to be determined by the NRRC Planning Subcommittee and full body.

Other notifications could include electronic feeds, notifications, news and updates about SPOC or other components of the system. Again, users of the system could set their notification preferences.

[illegible]

Figure 2. Diagram of notification process for new materials in the AZ SPOC Clearinghouse.

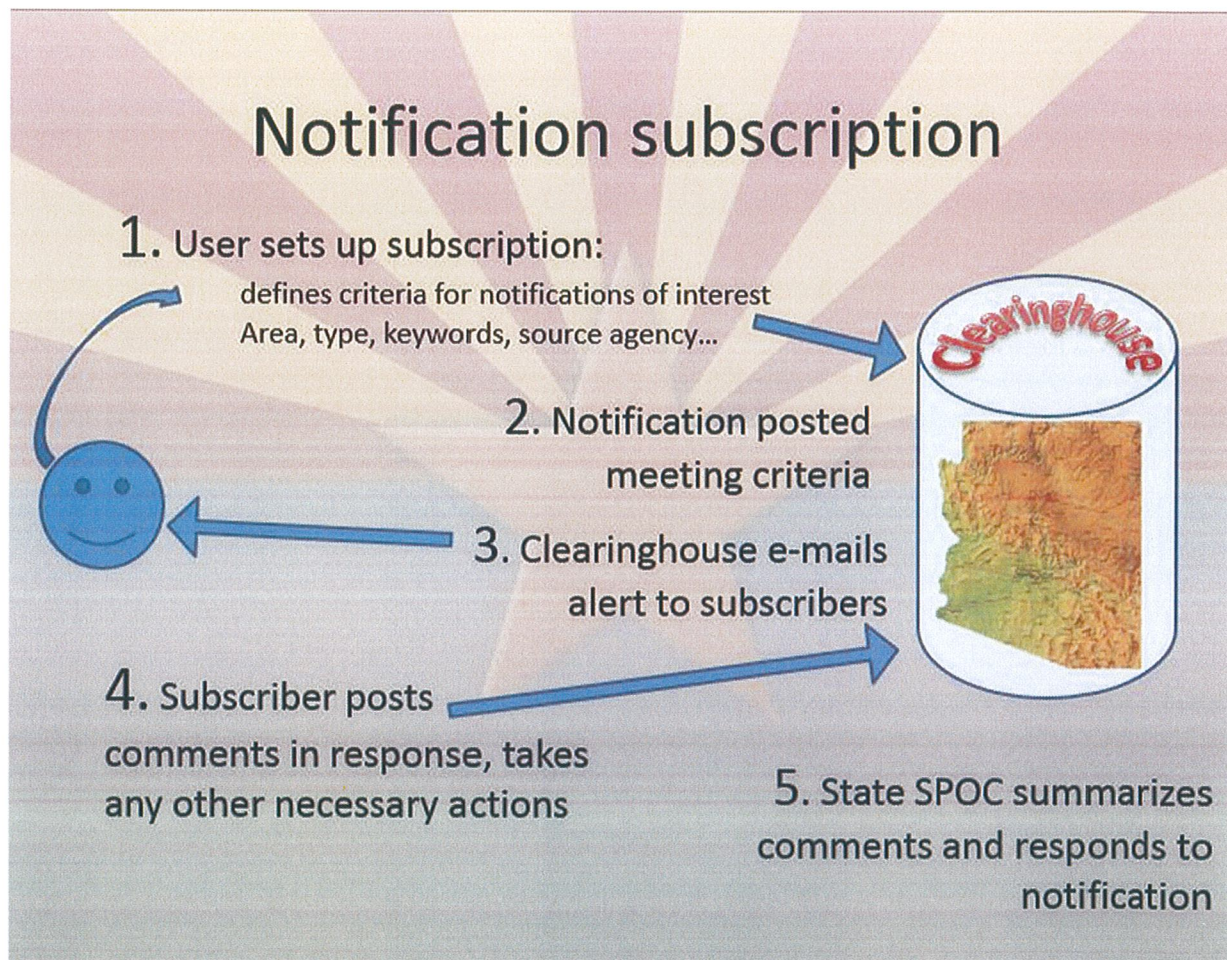


Figure 3. Diagram of clearinghouse notification subscription service

Data and document management system

The data and document management system would serve as an information source for State agencies responding to Federal actions. Data and document resources that support action review would be cataloged and accessed through the NRDSS, a web-based platform providing services to find and access data and documents managed through currently existing agency document systems such as Xerox DocuShare and Microsoft Sharepoint. The appropriate state agencies would continue to maintain and be responsible for their own information resources so that content access through the Data and Document Management system would be current and authoritative. For information resource provided to the NRDSS, each agency would need to provide metadata, and web-accessible access with appropriate authentication and access controls, as resources allow. The NRDSS development team would be expected to provide the technical support and guidance to carry out these functions.

Agencies that cannot or do not wish to host and serve their data and documents would need the resources to implement this capability, or to make arrangements with another host repository to provide that service. It's possible that the State's GIS repository-clearinghouse (AZGEO) could be modified to take on those duties. Another option is to modify or repurpose the AZGS USGIN repository (reposito-

ry.usgin.org). It currently has the capability to aggregating documents from multiple management systems, provided the appropriate metadata are exposed. Other solutions are also available.

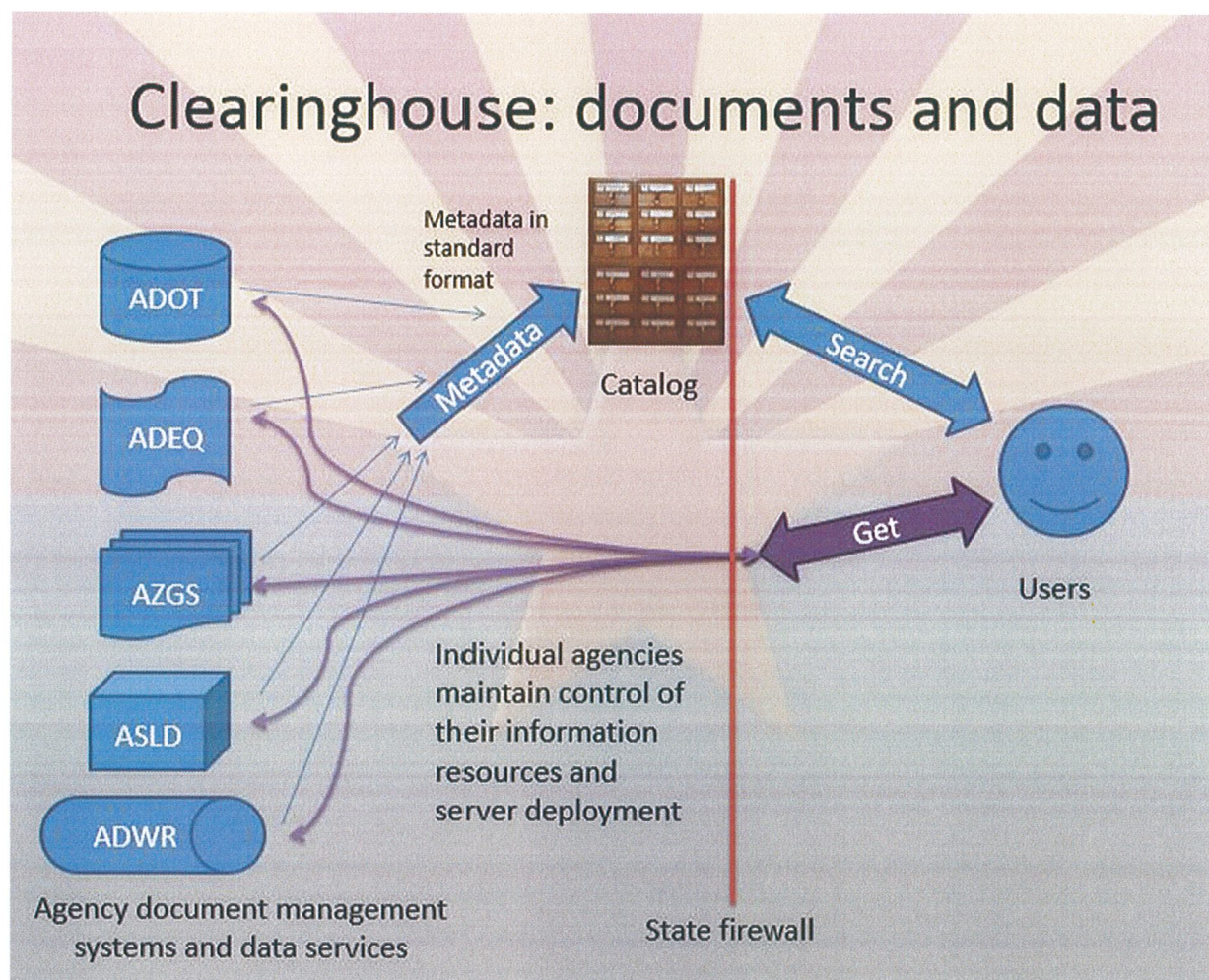


Figure 4. Conceptual design of the document management system.

Geospatial (GIS) data, documents and maps

Over the past several years, AGIC has developed a comprehensive plan for a centralized GIS repository and clearinghouse, called AZGEO (AGIC, 2013), with significant input from NRRC member agencies. AZGEO hosts data and provides web-service and file-download access to data. Agencies that do not have the technical support or desire to serve their own online data may choose to use AZGEO as a host. Data providers that host their own data can provide metadata to AZGEO to integrate with other services. AZGEO provides access control and authentication so that data can be shared with specific individuals, groups of individuals, or with the public. If shared with the public, then any entity registered on the website can access data or services marked as public, both within the AZGEO map viewer and within other viewers or applications outside of AZGEO.

Coordination between the Clearinghouse Development Subcommittee and the AZGEO development team is needed to integrate the AZGEO catalog into the data and document management system to provide a seamless discovery and access system for geospatial and non-geospatial information resources.



Figure 5. AZGEO Clearinghouse.

User interface for system interaction

The user interface is essentially the wrapper around all of the elements. It provides support for users to search among GIS files, data, and documents from state agencies, using keywords and geographic (map-based) search. It also provides support for registering a new action, configuring notification options, monitoring and coordinating responses to actions, and registering new datasets or documents for use by the NRDSS. The NRRC will host a community portal for the NRDSS, but each NRRC agency could offer access to their data and other resources through their own portals. A general conceptual design of the integrated system is shown in Figure 6.

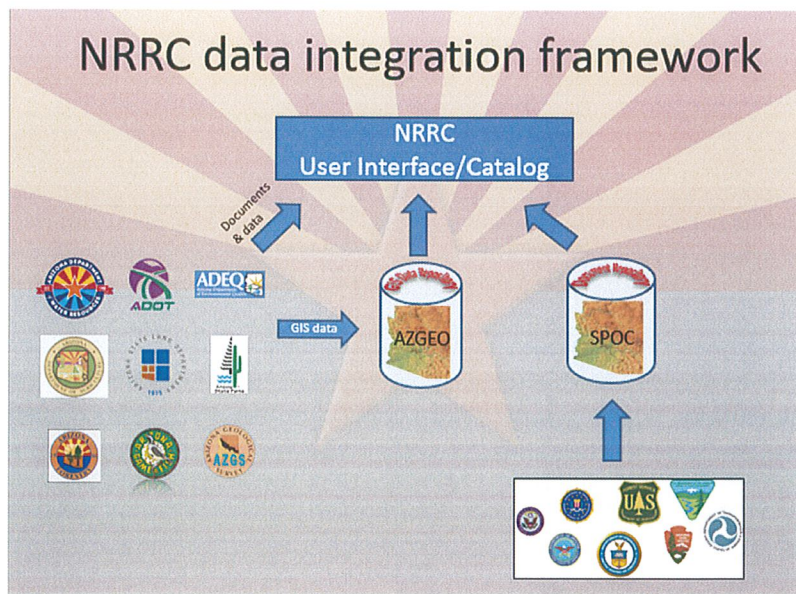


Figure 6. Conceptual design for a data integration framework. Individual state agencies host their own online resources, or provide them through AZGEO. The NRRC user interface provides search capabilities across all of these information resources to assist in evaluation and response to federal notifications that are managed by the SPOC.

Partner Resources

This section provides a summary of information and IT resources available from the various NRRC partner agencies.

Arizona Department of Environmental Quality (ADEQ)

ADEQ has developed tools that automate the data and document inventory process. These tools could be shared among NRRC member agencies during proposed Phase 1. The EPA Exchange Network is developing Web services for 10 key environmental themes that could be leveraged in support of NRDSS if adequate programming resources are available to establish the interchange standards.

Arizona Department of Water Resources (ADWR)

ADWR opened up their document management, Xerox DocuShare, to support the GIS Subcommittee document review process. The Clearinghouse Subcommittee could work with ADWR to determine the technical requirements of harvesting documents into NRDSS.

Arizona Game and Fish Department (AZGF)

AZGF has a formal review procedure for processing Federal Actions (Appendix 5). Over the last five years, AZGF logged approximately 550 Federal Actions. The AZGF is a good candidate to test the electronic SPOC prototype during development.

Arizona Geographic Information Council (AGIC)

AGIC developed AZGEO, the GIS component of NRDSS. Strong collaboration is needed between AZGEO developers and NRDSS developers for successful integration.

Arizona Geological Survey (AZGS – usgin.org)

The Arizona Geological Survey is developing the United States Geoscience Information Network (USGIN), an open-source catalog search and data integration system. Separate federal contracts and agreements funded the project and may be leveraged, at least in part, to support NRRC in the near term. Ability to customize the services and long term support under these federal grants are unclear.

Western Regional Partnership (WRP - <https://wrpinfo.org/>)

Western Regional Partnership (WRP) works with Federal and State agencies (including Arizona) to develop collaborative, geospatial solutions for the purpose of protecting natural resources and promoting sustainability, homeland security and military readiness. WRP's mission is to provide "a proactive and collaborative framework for senior-policy level Federal, State and Tribal leadership to identify common goals and emerging issues in the states of Arizona, California, Nevada, New Mexico and Utah and to develop solutions that support WRP Partners and protect natural resources, while promoting sustainability, homeland security and military readiness."

WRP membership includes 20 federal agencies, which encompass all or almost all the agencies dealing with NRRC issues in Arizona. The resources, tools, and capabilities they are developing for coordinating land management and land use issues across the five participating western states, should be applicable and transformable to facilitate the NRRC mission.

Preliminary conversations with WRP staff confirmed the technical ability to implement this and support for the concept was confirmed with the WRP GIS Committee and Steering Committee.

Three WRP resources are of initial interest – the GIS repository, Web Mapping Application, and Regional Project Database.

WRP is compiling a repository of an estimated 10,000 GIS layers from participating agencies related to land management and land use across the five state region. These are being made available through the Web Mapping Application, which is built on Esri ArcGIS software.

The first Memorandum of Understanding signed by WRP is with the US Geoscience Information Network (USGIN), which is managed by the Arizona Geological Survey on behalf of a national coalition of state and federal agencies. USGIN is a Web-based, open-sourced, framework for integrating data in a distributed network (as opposed to a central database). WRP has included in its current annual work plan, resources to make the GIS repository in the national distributed data network being developed by AZGS with support from USGS, National Science Foundation, and US Dept. of Energy.

Completed Actions

From January 2013 to November 2013, the Clearinghouse Subcommittee has completed the following actions:

- Developed a Scope of Work
- Defined the Subcommittee charge based on discussion around Subcommittee's role in meeting needs outlined in the Executive Order

- Developed a preliminary set of requirements for the proposed clearinghouse
- Identified NRRC stakeholder agency resources
- Researched the history of the AZSPOC and made recommendations for its re-establishment
- Ascertained that NRRC agencies use a variety of document management systems and that some agencies have no central system or common approach to document management
- Concluded that no agency wants to change their current system, or be required to convert their documents over to another format
- Directed the Arizona Geological Survey to prepare a proposal for an NRRC decision support system (this report)

Discussion

NRRC Decision Support System Components

AZSPOC

With email and digital documents now ubiquitous, it is logical that the AZSPOC become an electronic clearinghouse. Historically, federal agencies would mail announcements of the availability or the materials themselves to the state SPOCs and the appointed state manager would distribute them to the appropriate state agencies. To implement an electronic clearinghouse, the State must set up and maintain an online repository for digital materials and a standard process for registering notifications of new actions. The federal agencies must agree to submit notifications to AZSPOC through the required process. To support an automated broadcast of notifications to all appropriate state agencies, the notification documents should be geo-referenced and include metadata documenting the source and scope of the action, as well as the reporting agency and time frame for response.

Receiving AZSPOC materials from federal agencies in electronic form with the required metadata may or may not be feasible, since federal agencies are not specifically mandated to do so under the 1982 Executive Order. In that case, we hope to utilize existing text-analytic software which may be capable of providing rudimentary keyword and geo-referencing information for federal notifications, but for maximum accuracy and reliability, postings will need to be reviewed by a knowledgeable editor for the state.

While challenges are present, this roadmap will enable NRRC agencies to provide a state-of-the-art integrated system for utilizing state information resources, and for receiving and responding to Federal notifications, while respecting data ownership and existing Agency systems. One of the challenges for NRRC will be to get federal agencies to submit materials to the AZSPOC in formats that relieve the burden on the state to digitize them and create required metadata. An existing state-federal partnership and new federal requirements offer intriguing possibilities for Arizona to serve as a testbed and exemplar for state-federal interaction on natural resource and land management issues.

Data and document management system

NRRC agencies are using a variety of document management systems, including Xerox DocuShare, Microsoft Sharepoint, and CKAN, and some agencies have no central system or common approach to doc-

ument management. No agency wants to change their current system, or to be required to convert their documents to another format. Agencies without a current system expressed concern about the cost to acquire commercial software and to digitize paper documents for entry into a management system. The availability of free, open source software was offered as a one solution to the first issue. There is no intent to force any state agency to digitize their existing paper documents or make available as digital content. The expectation is that agencies will find or seek resources to create a digital environment as beneficial to their operations. The NRDSS could be a catalyst to encourage this and to provide further justification for funding authorities to make this kind of investment.

The agencies recognized that the solution has to involve the ability to integrate documents and other digital materials from disparate and incompatible formats not only among state agencies but from a large number of federal agencies that have similar challenges. The group also expressed the desire to be able to search for documents by key words and geographically, using tools such as a bounding box or coordinates to identify materials covering specific areas.

The Arizona Geological Survey's USGIN System offers a solution for integrating the different data and document management systems. Separate federal contracts and agreements funded the development of USGIN. These funds may be leveraged, at least in part, to support NRRC in the near term. Long-term support under these federal grants is unclear. USGIN, through its application for the National Geothermal Data System, is increasingly recognized as perhaps the leading data integration framework in the country and one that meets all requirements of the federal requirements for open data access. This argues that a USGIN compliant system will be more successful in creating a viable digital SPOC that all federal agencies can readily support.

Geospatial (GIS) data, documents and maps

AZGEO can support NRRC GIS needs in the near term, but a business model for long term availability of AZGEO to NRRC must be formulated. AZGEO development was made possible through Federal grants in support of E911 and Broadband. Currently, a Business Plan to address the funding model and governance of AZGEO is under development by the AZ State Cartographer's office and ADOA ASET to insure the long-term viability of AZGEO.

User interface for system interaction

The user interface is what brings all of the components of the system together for the people. The user interface should allow users to interact with the system in a way that is intuitive and to minimize the amount of time people have to search for the information they seek.

Other Considerations

Federal Open Data Policy

Recently, an Executive Order, memos from the Office of Science and Technology Policy (OSTP) and Office of Management and Budget (OMB) were released that have significant impact on government data policies.

The OSTP Memorandum for Heads of Executive Departments and Agencies, Increasing Access to the Results of Federally Funded Scientific Research in February 2013 ensures that federally funded research is “available to and useful for the public, industry, and scientific community” (Holdren, 2013). This requires agencies with research budgets over \$100 million to ensure that “...the direct results of federally funded scientific research are made available to and useful for the public, industry, and the scientific community. Such results include peer-reviewed publications and digital data” (Holdren, 2013). The memo further requires that agencies ensure that publications and metadata produced with federal funds are stored in an archival solution that:

1. Provides for long-term preservation and access to the content without charge
2. Uses standards, widely available and, to the extent possible, nonproprietary archival formats for text and association content (e.g. images, video, supporting data)

The Executive Order, released May 9, 2013, Making Open and Machine Readable the New Default for Government Information, calls for government information to be managed as an asset throughout its life cycle to “promote interoperability and openness, and, whenever possible and legally permissible, to ensure that data are released to the public in ways that make the data easy to find, accessible, and usable” (White House, 2013).

The OMB memo was also released on May 9, 2013 and begins the implementation of the Executive Order by requiring agencies to collect or create information in a way that “supports downstream information processing and dissemination activities” (OMB, 2013). This is specifically requested to assist and enable the development of products and services that benefit the public.

The federal open data initiative promotes distributed data sharing and life cycle maintenance of federally funded datasets. Thus, the NRRC vision of shared and easy data access can assist federal agencies in completing these open-data requirements.

System alternatives

There are several alternatives that could be used in the development of NRDSS. There are front-end and back end considerations. The front-end considerations refer to the user interface or ‘wrapper’ around the disparate systems. The back-end is the system architecture that supports the integrated network of information resources (see Appendix 4).

Education and Training

One of the key components for maintaining the system is ensuring that end-users have access to appropriate materials and training courses for the system. AGIC holds an annual conference with a variety of GIS training and education elements. AZGS is developing a wide range of education and training materials, tutorials, and guides on open source Web-based data integration methods that will be freely available to NRRC and federal agencies.

Risk assessment

Key findings for Operational Sustainability:

- A distributed system's weakness and strength is that it relies on multiple stakeholders for maintenance and management.
- Virtual servers offer rapid extensibility, less onsite maintenance, and overall lower costs than onsite hardware. In addition, they offer flexibility for rapid replication and disaster recovery. Thus, it is recommended that virtual machines be used for web service deployment and replication when at all possible.
- Long-term developer engagement should be encouraged by maintaining the developers' forums, code-sharing repositories, and system documentation.
- Service Level Agreements (or Recommendations) should be prepared for additional (or potential) nodes.
- Licensing costs for software must be considered in the long-term maintenance of the system. Extending the use to other user agencies may elicit additional resources.

Recommendations

Phase One (Year 1) Recommendation

The Clearinghouse Subcommittee would identify existing resources that meet the operational needs and technical requirements of the clearinghouse. During this phase, the Clearinghouse Subcommittee would also work to identify resource gaps, develop solution and budget proposals to fill the gaps, and coordinate with other subcommittees to identify opportunities for integrating with developed by other subcommittees. Clearinghouse Subcommittee provide direction to the team that will develop and test prototypes.

The prototype would demonstrate how the functionality of NRDSS meets agency needs and requirements. The first step of developing the prototype is integrating AZGEO as the State GIS repository/clearinghouse, Western Regional Partnership's Regional Project Database as a digital SPOC, and documents from at least one NRRC agency's document management system (nominally ADEQ). This prototype is a proof-of-concept.

The idea is to assess what is required in aggregating data and document resources from three separate system endpoints (AZGEO, WRP, and ADEQ). The goal is to minimize the amount of work required of each agency. In other words, we'd literally be saying to the agencies "you do whatever you're doing and we'll write the wrapper."

For demonstration purposes, we can re-use existing infrastructure developed out of the USGIN project. Prototype development would require some coordination between appropriate technical staff to get the right pieces of the puzzle to fit together.

Phase Two (Year 2) Recommendation

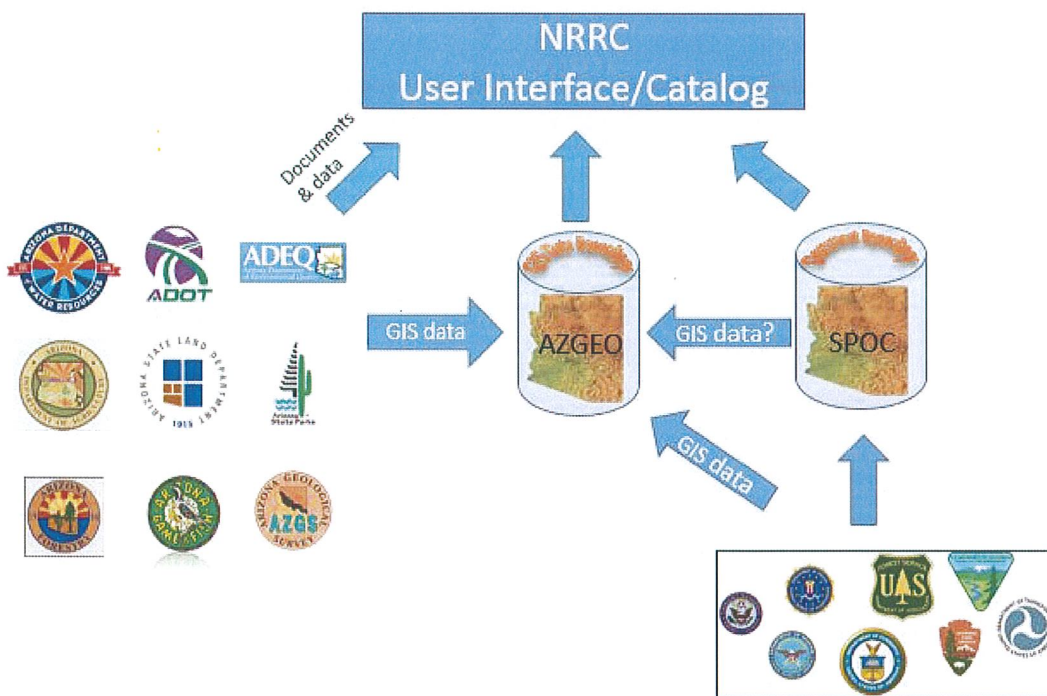
The Clearinghouse Subcommittee would enhance available resources and develop new capabilities to fill gaps identified in Phase One. During Phase Two, the Clearinghouse subcommittee would also begin

planning for the integration of infrastructure developed by other subcommittees. This development will be contingent on acquiring the resources identified in budget proposals developed during Phase One.

Phase Three (Year 3 and beyond) Recommendation

The Clearinghouse Subcommittee efforts will be fully integrated with other subcommittee efforts. During Phase Three, the anticipated Decision Support System will include the NRRC GIS system, a Single Point of Contact for the State of Arizona (AZSPOC), Federal documents and data relevant to natural resource management, and an online catalog of all State Agency documents useful to NRRC members for planning and mitigation purposes. Support would be provided to help NRCC agencies find technical and financial resources to convert their paper records into a digital content management system with Web services.

NRRC Decision Support System



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The White House, Office of the Press Secretary, "Executive Order – Making Open and Machine Readable the New Default for Government Information," May 9, 2013, <http://www.whitehouse.gov/the-press-office/2013/05/09/executive-order-making-open-and-machine-readable-new-default-government-common-core-metadata-schema>

Common Core Metadata Schema, September 2013, <http://project-open-data.github.io/schema/>

Appendix 1: Executive Order 2013-02

Executive Order 2013-02

Establishing the Arizona Natural Resources Review Council

WHEREAS, the ability for state natural resource agencies to engage and impact federal land and resource management plans is paramount; and

WHEREAS, cross agency coordination is critical to a sound and timely response to actions on federal lands that will impact state resources and economies; and

WHEREAS, federal land and resource planning processes often do not consider the short and long-term needs of the State of Arizona and local governments; and

WHEREAS, political change at the federal level can impede the ability of state agencies to effectively engage the federal government and result in federal intrusion on state authorities; and

WHEREAS, federal land and resource management decisions are being driven by litigation processes that have resulted in diminished multiple-use and sustained-yield principles; and

WHEREAS, we must protect State interests related to wildlife, land, water and natural resources by actively engaging and countering federal encroachment on State authorities tasked with managing Arizona's natural resources.

NOW, THEREFORE, I, Janice K. Brewer, Governor of the State of Arizona, by virtue of the power vested in me by the Constitution and the laws of this State do hereby order and direct as follows:

1. The Arizona Natural Resources Review Council (hereafter Council) is established. The Council shall develop land and natural resource management strategies for Arizona and coordinate with state natural resource agencies and their existing management plans.
2. The Council shall consist of the following natural resource agency directors appointed by the Governor:
 - Arizona Game and Fish Department
 - Arizona State Land Department
 - Arizona Department of Environmental Quality
 - Arizona Department of Water Resources
 - Arizona State Forester
 - Arizona Geological Survey
 - Arizona State Parks Department
 - Arizona Department of Agriculture
3. The Governor shall designate the Chairperson.
4. The Council shall prepare a comprehensive report and plan to the Governor for long-term land and natural resource management. The report shall include and address multiple use and sustained yield approaches, public access issues and sustainable economic development.

5. The Council shall develop a coordinated and centralized Geographic Information System database model that identifies current and future management priorities for designated land and natural resource areas.
6. The Council shall identify and prioritize legal, legislative and incentive-based needs that protect and maintain state interests related to wildlife, land, water and other natural resources.
7. The Council shall provide recommendations to the Governor on a statewide approach to mitigation and conservation banking that includes State government, local governments and the private sector in order to meet long-term natural resource conservation objectives.
8. The Chairperson may form an executive committee or other sub-committees as necessary.
9. The Council shall meet as needed to conduct its affairs.
10. This Executive Order shall take effect immediately upon signature.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona.



Janice K. Brewer
GOVERNOR

DONE at the Capitol in Phoenix, on this 14th day of January in the Year Two Thousand Thirteen and of the Independence of the United States of America the Two Hundred and Thirty-Seventh.

ATTEST:

Ken Blumenthal

SECRETARY OF STATE

Appendix 2: NRRC Clearinghouse Subcommittee Scope of Work

Charge to Subcommittee:

"The Council shall identify and prioritize legal, legislative and incentive-based needs that protects and maintains state interests related to wildlife, land, water and other natural resources."

-Executive Order 2013-02

A deliverable that was discussed by the Natural Resources Review Council (NRRC) included the development and implementation of a document review Clearinghouse. In order to better organize within the state and achieve the Governor's expectations, there is a need to establish a mechanism that would ensure all appropriate agencies are getting information and that all agencies are able to respond to the proposed action. A clearinghouse will serve as the coordination point for the federal government to request state review and comment, which will meet their requirements for coordination with the state. An automated system would be desirable for the agencies.

As a result, the Council established a subcommittee to identify and develop a process for coordinating federal actions with the state and state agencies. The Subcommittee should evaluate a subscription services format, similar to the current Westlaw process, as an example. Bob Broscheid (AGFD) will serve as lead and will coordinate with Governor's Office of Strategic Planning and Budget on additional assistance as needed.

Work of the Subcommittee

1. Conduct preliminary assessment report that surveys states in order to benchmark existing Clearinghouse systems for scope and capability.
2. Conduct survey of selected state Clearinghouse systems, consistent with Council direction, for suitable web-based platforms, budget and applicable policies/regulations.
3. Assess Arizona state agency access needs and requirements.
4. Assess mechanisms to ensure federal agency compliance.
5. Compile results into draft report for NRRC review and approval.
6. Ensure communication and coordination of activities and actions with the Planning Subcommittee.

Deliverables and Timelines

Preliminary state assessment report to be presented to NRRC	(April 2 meeting)
Provide Draft Work Plan for Council review and comment.	(April 29, 2013)

Complete in-depth analysis of other state Clearinghouse systems and Arizona state agency needs assessment, as well as federal process compliance requirements **(June Meeting)**

Draft budget recommendations for AZ Clearinghouse made to NRRC to coincide with FY15 budget proposals, if warranted. **(August meeting)**

Resources

Subcommittee work will primarily use volunteer efforts by agency subcommittee members and other outside sources as necessary to complete the deliverables.

Subcommittee Members

Clearinghouse Subcommittee		
Gary Hovatta (Bob Broscheid Chair through October 31, 2013);		
Subcommittee Member	Email	Representing
Laura Canaca	lcanaca@azgfd.gov	AGFD
Bill Boyd	bboyd@azland.gov	ASLD
Sherri Zendri	zendri.sherri@azdeq.gov	ADEQ
Michelle Moreno	mamoreno@azwater.gov	ADWR
Jerry Payne	jerrypayne@azsf.gov	ASF

Appendix 3: Acronyms

ADEQ – Arizona Department of Environmental Quality
ADOA – Arizona Department of Administration
ADWR – Arizona Department of Water Resources
AFIS – State of Arizona Financial System
AGFD – Arizona Game and Fish Department
AGIC – Arizona Geographic Information Council
ALRIS – Arizona Land Resource Information System (part of Arizona State Land Department)
ASLD – Arizona State Land Department
ASP – Arizona State Parks
ASP-SHPO – Arizona State Parks, State Historic Preservation Office
AZDA – Arizona Department of Agriculture
AZGEO – Arizona Geodata Portal (managed by the Arizona Geographic Information Council)
AZGS – Arizona Geological Survey
AZSF – Arizona State Forester
AZSPOC – Arizona Single Point of Contact
DOE – U.S. Department of Energy
FGDC – Federal Geographic Data Committee
FTE – Full Time Employee
GIS – Geographic Information Systems
GMA – National States Geographic Information Council Geospatial Maturity Assessment
ISO – International Organization for Standardization
IT – Information Technology
NGDS – National Geothermal Data System
NRRC – Natural Resources Review Council
NSDI – National Spatial Data Infrastructure
NSF – U.S. National Science Foundation
NSGIC – National States Geographic Information Council
OGC – Open Geospatial Consortium
OMB – U.S. Office of Management & Budget
OSTP – U.S. Office of Science and Technology Policy
RDCC – Utah Resource Development Coordinating Council
REST – Representational State Transfer
SCO – State Cartographer’s Office (part of Arizona State Land Department)
SOW – Scope of Work
USGIN – U.S. Geoscience Information Network
WFS – Web Feature Service
WMS – Web Map Service
WRP – Western Regional Partnership
XML – Extensible Markup Language

Appendix 4: Existing Clearinghouse Resources

Coordinating Bodies

The NRRC GIS subcommittee identified three coordinating bodies that provided framework and guidance information for the development of this report. These coordinating bodies are the Arizona Geographic Information Council, the National States Geographic Information Council and Western Regional Partnership.

Arizona Geographic Information Council (AGIC)

The Arizona Geographic Information Council (AGIC) is a primary GIS resource for the NRRC GIS Subcommittee, for GIS data and services, and policy.

AGIC has been coordinating GIS efforts in Arizona since 1989. AGIC was established by Executive Order 89-24 and now exists in legislation as a council (ARS 27-177). The mission of AGIC is “to coordinate the development and management of geographic information in Arizona. AGIC promotes the use of GIS and related technologies to address problems, develop plans, and manage the natural, economic and infrastructure resources of the state.”

AGIC has been incredibly successful in pursuing this mission. Several geospatial planning documents AGIC has produced are available for download on the AGIC website. Of these documents, NRRC GIS Subcommittee Report incorporates research and guidance from the following documents:

1. [2013 AGIC Geospatial Data Sharing Guidelines](#)
2. [2010 AGIC Strategic Plan](#)
3. [2010 Business Plan](#)

National States Geographic Information Council (NSGIC)

National States Geographic Information Council (NSGIC) is an association that might be considered the national equivalent of AGIC. The mission of NSGIC is “to promote statewide geospatial coordination activities in all states and to be an effective advocate for states in national geospatial policy and initiatives, thereby enabling the National Spatial Data Infrastructure (NSDI).”

NSGIC’s goal is to provide “a unified voice on geographic information and technology issues, advocates State interests, and supports its membership in their statewide initiatives. The Council actively promotes prudent geospatial information integration and systems development.”

NSGIC has also been incredibly successful in pursuing its mission. Several geospatial planning documents NSGIC has produced are available for download on the NSGIC website; the Maturity Assessment is discussed below.

Western Regional Partnership

Arizona is one of five Western states partnering with 20+ federal agencies in the Western Regional Partnership to work collaboratively on land management and land use issues in the area.

Existing Documents, Surveys, and Assessments

The NRRC GIS Subcommittee identified five strategic documents that provide the framework and guidance for the development of this report.

Arizona Geospatial Clearinghouse (AZGEO) Implementation Plan (Draft)

The Arizona Geospatial Clearinghouse Implementation Plan document provides the structure for governance, functionality and technical specifications for the AZGEO. The AZGEO Implementation Plan draft is currently under review and contains information relevant to the NRRC GIS Subcommittee report. Requirements of the NRRC can be incorporated into AZGEO Implementation Plan to better address the needs and requirements of the NRRC.

Existing Technical Resources

Arizona Geospatial Clearinghouse (AZGEO)

The AZGEO Clearinghouse is an initiative of the Arizona Geographic Information Council. AZGEO is designed to provide GIS users with links to Internet map services, FGDC compliant metadata, and geospatial data downloads. Data include GIS layers for administrative boundaries, demographic, environmental factors, hydrology, imagery, indices, mining, natural features, transportation and more.

CKAN

ckan is an open source data management system used by Data.gov and Geospatial Platform. Both sites are served by the same catalog. Users can search for datasets for a based location and keywords.

Geospatial Platform (Federal GIS Clearinghouse)

The Geospatial Platform, a federal geospatial clearinghouse established by the Department of Interior at the direction of the Federal Geographic Data Committee Executive Council, is the official federal repository and clearinghouse for the federal government and offers promise as a central source of federal GIS materials. The Geospatial Platform is established as a GIS module/component of a broader Data.gov website.

USGIN/NGDS

The United States Geoscience Information Network (USGIN) helps users join or build networks that can be used to access and share geoscience data from across the country. USGIN uses specifications that can be used to construct decentralized web-based data-sharing networks using free-and-open-source software. These networks facilitate the large-scale exchange of information. USGIN data-sharing networks, such as the National Geothermal Data System (NGDS), can be accessed by anyone, using little more than a web browser. Data submitted to these networks is controlled exclusively by the user providing the data.

Western Regional Partnership Repository and Clearinghouse

WRP is compiling an online GIS data repository that is expected to host 10,000 GIS layers available to WRP participants. In addition, the WRP Regional Project Database is a clearinghouse of documents and links that could ostensibly support the AZSPOC.

Appendix 5: Arizona Game and Fish Bluesheet Procedure

This is how AZGF handles the review of federal and developmental projects/documents in house. This is a possible scenario for what could be adapted for the electronic SPOC. Basically, documents come in, are sorted, entered into a database, assigned an ID number, priority level, project lead, and sent out for review. Comments are collected by the project lead and compiled into a review letter.

Bluesheet Procedure:

- ❖ Habitat mail is received and sorted by the Habitat Admin's
- ❖ Document is logged in to an Access database and the Admin determines the Bluesheet level and the distribution list.
- ❖ Bluesheets are sent via email (large documents or original maps may be an exception), with subject lines containing general topic info entered by the Habitat Branch Admin.
- ❖ Every Bluesheet contains the Access database log number and the Final Due Date.

Bluesheet Breakdown:

B1-Please coordinate all comments for draft letter to: Name, Project Evaluation Specialist, Habitat Branch by: 3/12/08

**draft letter to be reviewed by WMHB, unless being signed by a Branch Chief.*

- B1 is used for High Priority OR Phoenix Leads.
- If you are the lead your name will be listed on the B1 as shown above.
- The due date listed below the leads name is the date that all comments need to reach the lead (Usually 1-2 weeks before Final Due Date).
- If you are a recipient of a B1 but not the lead you need to respond to the lead by the due date shown. It is a good idea to cc comments to the Admin who sent you the Bluesheet as well but not required. It is appreciated that you respond to the lead even if the response is "no comment".
- Any comments received after the date shown will be included at the discretion of the lead.

B2-Region to prepare letter directly to agency for appropriate signature.

- ❖ If letter is sent directly from your office, please cc copy to the PEP Supervisor.
- ❖ If no action will be taken, please e-mail PEP Supervisor no later than 1 week prior to the actual due date.
 - Bluesheet 2 (B2) is directed at issues that are region specific. B2's are assigned to topics that have been identified as a Department concern, either because of previous responses or direction from the region, Branch Chief, AD, or higher authority.
 - If you are a recipient of a B2 but not the lead you need to respond to the lead with enough time for them to complete and send a response by the Final Due Date shown, sending comments 1 - 2 weeks before due date is appreciated. It is a good idea to cc comments to the Admin who sent you the Bluesheet as well but not required. It is appreciated that you respond to the lead even if the response is "no comment".
 - Any comments received after the date shown will be included at the discretion of the lead.

- If the region chooses not to respond but has received comments from Bluesheet recipients they need to inform the recipients that they need to determine if the comments are enough of an issue to respond themselves.

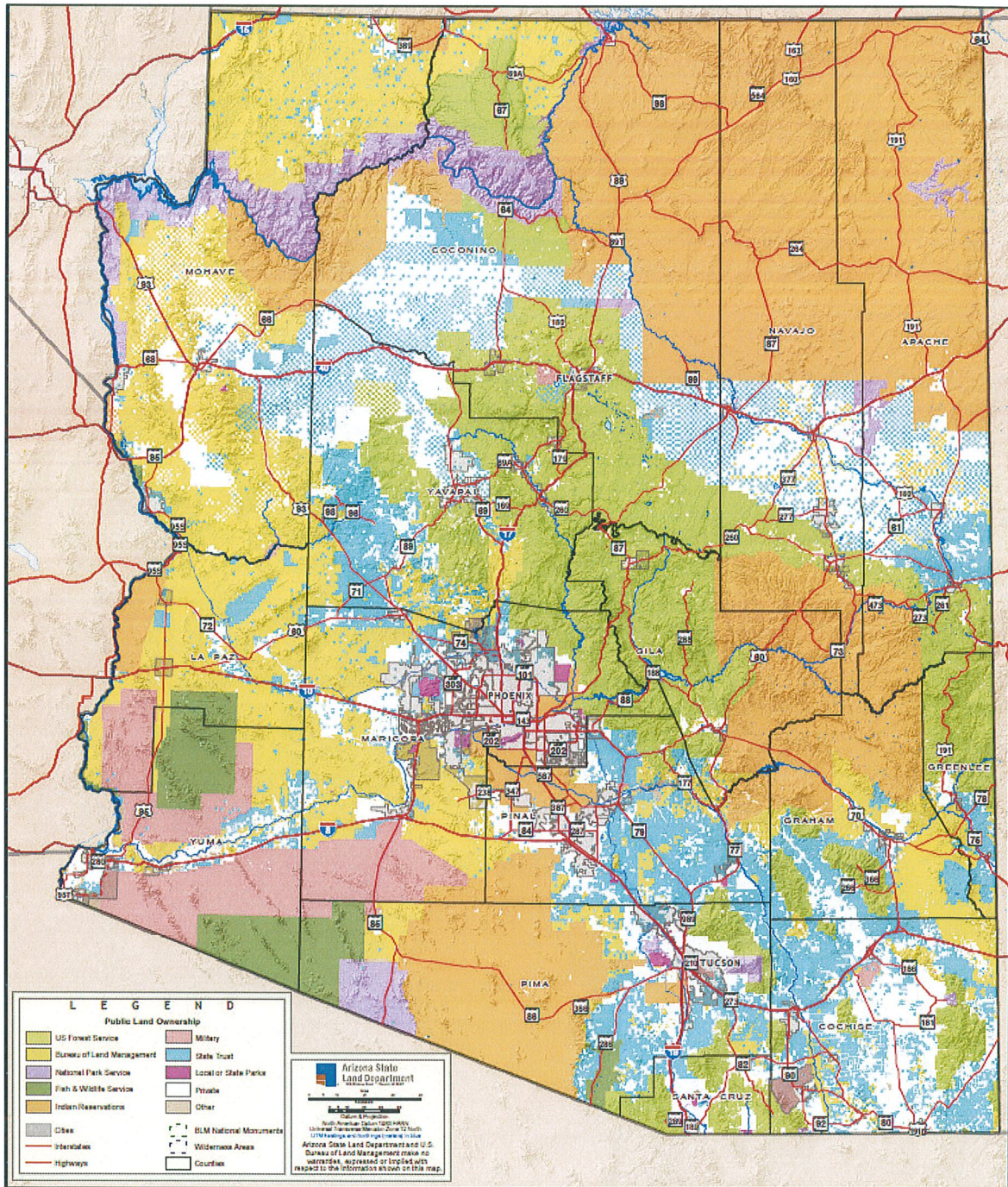
XX B3-Region to review material and determine if action is necessary.

- ❖ If no action will be taken, please e-mail PEP Supervisor.
- ❖ If action is required, contact PEP to request HDMS information to include in your letter.
 - B3's are assigned to topics that are region specific but it is unknown how much of a concern exists and it is left up to the region to determine if a response is necessary.
 - The region (Habitat Regional Staff) is the lead, if more than one region is included it will be stated in the body of the Bluesheet which region is the lead. Regions can also feel free to send out a due date to the Bluesheet recipients, add recipients, or give the lead to another regional person (if it's within their authority to do so).
 - If you are a recipient of a B3 but not the lead you need to respond to the lead with enough time for them to complete and send a response by the Final Due Date shown, sending comments 1 - 2 weeks before due date is appreciated. It is a good idea to cc comments to the Admin who sent you the Bluesheet as well but not required. It is appreciated that you respond to the lead even if the response is "no comment".
 - Any comments received after the date shown will be included at the discretion of the lead.
 - If the region chooses not to respond but has received comments from Bluesheet recipients they need to inform the recipients that they need to determine if the comments are enough of an issue to respond themselves.

Attachment G

Report of the Mitigation Banking Subcommittee

**Final Report of the Mitigation and Conservation Banking Subcommittee of the
Governor's Natural Resources Review Council**



Mitigation and Conservation Banking Subcommittee Final Report

Purpose

The Mitigation Banking Subcommittee (MBS) was appointed by the Governor's Natural Resources Review Council (NRRC) to provide recommendations on a statewide approach to mitigation and conservation banking that includes State government, local governments and the private sector in order to meet long-term natural resource conservation objectives.

The MBS members are:

Kevin Kinsall, Natural Resources Policy
Advisor to Governor Jan Brewer

Linda C. Taunt, Deputy Director, Water
Quality Division ADEQ

Vanessa Hickman, State Land Commissioner

Floyd Roehrich, Jr, PE Deputy Director for
Policy
Arizona Department of Transportation

Jim Adams, Deputy State Land
Commissioner

Tim Wade, Arizona Game and Fish
Department, Chief Wildlife Contracts Branch

Bob Broscheid, AZGFD Special Assistant to
the Director

The MBS met on the following dates:

- Friday, April 19, 2013
- Wednesday, May 29, 2013
- Thursday, June 13, 2013
- Monday, July 15, 2013
- Monday, August 05, 2013
- Tuesday, September 17, 2013

Methodology

The MBS examined mitigation and conservation banking in other states and engaged in discussions with industry professionals as well as academics involved with successful mitigation and conservation banking projects. MBS discussions and advisors included Mark Stapp, Director of the Master of Real Estate Program at the W.P. Carey School of Business; Robert Anderson, Fennemore Craig; Steven Spangle, Field Supervisor, US Fish and Wildlife Service; Sally Diebolt, United States Army Corps of Engineers, and Sandra Kelley, an expert on State Trust land issues.

The MBS discussed the history of conservation and mitigation banking in Arizona and the possible future inclusion of State Trust lands in revenue generating conservation and mitigation efforts. The MBS placed special emphasis on developing a strategy for including State Trust lands whose highest and best use is conservation and mitigation.

Arizona's 9.2 million acres of remaining State Trust lands were granted to the state by the United States Congress for the benefit of several public institutions, the largest of which are the Common Schools, otherwise known as K-12 education. The management and disposition of State Trust lands is regulated by the Arizona and New Mexico Enabling Act, the Arizona State Constitution, Arizona Revised Statutes, and over 100 years of case law. As a fiduciary, the State Land Department must manage Trust land to generate the highest return for the beneficiaries.

The Endangered Species Act of 1973 (ESA) presents many challenges for development throughout Arizona. Arizona currently has over 77 species that are listed as threatened or endangered and over 25 of these have designated critical habitat. In addition to those already listed as threatened or endangered many more are candidate species or subject to existing conservation agreements.

When a species becomes subject to the provisions of the ESA, the impacts to development are unavoidable. The presence of a species or its habitat will necessitate a process with the United States Fish and Wildlife service that can take many years to complete and will almost certainly result in severe limitations on development. Given the large number of species already designated or under consideration, virtually every part of the State will be affected.

In addition to conservation requirements under the ESA, the Clean Water Act (CWA) requires mitigation resulting in additional limitations on development.

Further planning and development of State management plans based on sound science and local information will include the need for mitigation and conservation banking opportunities to comply with the ESA and CWA mandates while allowing for responsible economic growth in Arizona.

Arizona's climate, development patterns, and constitutional and statutory requirements as well as the fiduciary responsibilities of the State Land Department make including State Trust land in mitigation and conservation banking efforts a challenge, the MBS has determined an approach that would benefit the Trust and the environment while also furthering economic development on State Trust land and throughout the state. With those goals in mind, the MBS developed the following recommendations:

1. Continue to explore the ability and mechanisms for the inclusion of State Trust lands in the AZGFD In Lieu Fee program and in the USFWS conservation banking and candidate conservation agreement programs or in similar mitigation and conservation programs.
2. Continue to engage the USFWS to determine their interest in establishing conservation banks and/or candidate conservation agreements on qualifying lands.

3. Explore funding options through the state or available federal grants and private sources to conduct an inventory of ASLD lands to identify lands that are suitable for 404 mitigation credits and/or the establishment of conservation banks or candidate conservation agreements.

A. Use obtained funds to:

1. Conduct a review of existing literature and mapping to initially determine ASLD lands that may contain potential waters of the US and/or suitable habitat for ESA species.
2. Perform cursory ground truthing of these lands to inventory potential waters of the US and/or suitable ESA habitats.
3. If survey data is not available, conduct ESA species surveys using existing protocols to determine presence of ESA species.
4. Conduct vegetative community ground truthing surveys to verify classifications of habitats and habitat that may be suitable for ESA.
5. Continue to engage the USFWS and ACOE, relevant jurisdictions, lessees, potential lessees/purchasers, and adjoining landowners, core Arizona industrial land users, and the development community, to assess future needs for conservation and 404 mitigation, and to explore mechanisms for use of suitable Trust lands to meet these needs.

The implementation of these recommendations is anticipated to be an ongoing process dependent on available resources and funding. The anticipated end result will be the inclusion of State Trust lands whose highest and best use is in mitigation and conservation banking efforts, which will generate revenues for the trust, enabling coordinated planning, multi-use of lands, and economic development throughout the entire state.